

CLAIMS

What is claimed is:

1. In a first router that supports a virtual router protocol, a method of sending a redirect packet to a host, the redirect packet notifying the host that specific packets are to be redirected to a second router, the method comprising:
 - receiving a packet from the host, the packet including a source address identifying the host and a destination address identifying a destination network;
 - ascertaining the destination network of the packet from the destination address;
 - obtaining from a routing table an address of a next router to the packet's destination network;
 - determining whether the next router and the host identified by the source address of the packet are on the same network; and
 - when it is determined that the next router and the host are on the same network, composing the redirect packet notifying the host that packets addressed to the destination network are to be redirected to a virtual address of the next router and sending the redirect packet to the host.
2. The method as recited in claim 1, wherein determining whether the next router and the host identified by the source address of the packet are on the same network comprises:

determining from the routing table that a next hop to reach the destination network is back out the same interface that the packet was received on.

3. The method as recited in claim 1, further comprising:

replacing an IP address of the next router in the redirect packet with the virtual address of the next router.

4. The method as recited in claim 1, wherein the virtual router protocol is VRRP or HSRP.

5. The method as recited in claim 1, wherein the redirect packet is an ICMP redirect.

6. In a first router that supports a virtual router protocol, a method of sending a redirect packet to a host, the redirect packet notifying the host that packets to be sent to a particular network are to be redirected to a second router, the method comprising:

determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router, the virtual IP address being associated with one or more routers;

when it is determined to send a redirect packet to the primary IP address of the second router, composing a redirect packet indicating that packets to be sent to a specific network are to be redirected to the primary IP address of the second router and sending the

redirect packet to the host; and

when it is determined to send a redirect packet to the virtual IP address of the second router, composing a redirect packet indicating that packets to be sent to the specific network are to be redirected to the virtual IP address of the second router and sending the redirect packet to the host.

7. The method as recited in claim 6, wherein the first router implements a virtual router protocol.

8. The method as recited in claim 7, wherein the virtual router protocol is VRRP or HSRP.

9. The method as recited in claim 6, wherein the redirect packet is an ICMP redirect.

10. The method as recited in claim 6, wherein determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router comprises:

determining whether a virtual router protocol is running on the first router.

11. The method as recited in claim 10, wherein determining whether a virtual router protocol is running on the first router comprises:

receiving a packet; and

determining whether a virtual router protocol is running on an interface of the first

router on which the packet was received.

12. The method as recited in claim 11, wherein when it is determined that a virtual router protocol is not running on the interface of the first router on which the packet was received, it is determined to send a redirect packet to the primary IP address of the second router.

13. The method as recited in claim 6, wherein determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router comprises:

determining whether one or more HSRP groups are configured for the second router; and

when it is determined that no HSRP groups are configured for the second router, it is determined to send the redirect packet to the primary IP address of the second router.

14. The method as recited in claim 6, wherein determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router comprises:

performing a lookup in a virtual router table for the primary IP address of the second router;

determining from the virtual router table whether one or more HSRP groups are

configured for the second router; and

when it is determined that no HSRP groups are configured for the second router, it is determined to send a redirect packet to the primary address of the second router.

15. The method as recited in claim 6, wherein determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router comprises:

performing a lookup in a virtual router table for the primary IP address of the second router; and

determining whether the second router is an active router for the virtual router protocol.

16. The method as recited in claim 15, wherein when it is determined that the second router is an active router for the virtual router protocol, it is determined to send the redirect packet to a virtual address of the second router.

17. The method as recited in claim 16, wherein composing a redirect packet when it is determined to send the redirect packet to a virtual address of the second router comprises:

obtaining one of one or more virtual IP addresses associated with the primary IP

address of the second router; and

composing a redirect packet including the obtained virtual IP address associated with the primary IP address of the second router.

18. The method as recited in claim 15, wherein when it is determined that the second router is not an active router for the virtual router protocol, it is determined that a redirect packet is not to be sent to the host.

19. A first router that supports a virtual router protocol, the first router being capable of sending a redirect packet to a host, the redirect packet notifying the host that specific packets are to be redirected to a second router, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a packet from the host, the packet including a source address identifying the host and a destination address identifying a destination network;

ascertaining the destination network of the packet from the destination address;

obtaining from a routing table an address of a next router to the packet's destination network;

determining whether the next router and the host identified by the source address

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of the packet are on the same network; and

when it is determined that the next router and the host are on the same network, composing the redirect packet notifying the host that packets addressed to the destination network are to be redirected to a virtual address of the next router and sending the redirect packet to the host.

20. A first router that supports a virtual router protocol, the first router being capable of sending a redirect packet to a host, the redirect packet notifying the host that specific packets are to be redirected to a second router, comprising:

means for receiving a packet from the host, the packet including a source address identifying the host and a destination address identifying a destination network;

means for ascertaining the destination network of the packet from the destination address;

means for obtaining from a routing table an address of a next router to the packet's destination network;

means for determining whether the next router and the host identified by the source address of the packet are on the same network; and

means for composing the redirect packet notifying the host that packets addressed to the destination network are to be redirected to a virtual address of the next router and sending the redirect packet to the host when it is determined that the next router and the host are on the same network.

21. A computer-readable medium adapted for sending a redirect packet to a host from a first router that supports a virtual router protocol, the redirect packet notifying the host that specific packets are to be redirected to a second router, comprising:

instructions for receiving a packet from the host, the packet including a source address identifying the host and a destination address identifying a destination network;

instructions for ascertaining the destination network of the packet from the destination address;

instructions for obtaining from a routing table an address of a next router to the packet's destination network;

instructions for determining whether the next router and the host identified by the source address of the packet are on the same network; and

instructions for composing the redirect packet notifying the host that packets addressed to the destination network are to be redirected to a virtual address of the next router and sending the redirect packet to the host when it is determined that the next router and the host are on the same network.

22. A first router that supports a virtual router protocol, the first router being adapted for sending a redirect packet to a host, the redirect packet notifying the host that packets to be sent to a particular network are to be redirected to a second router, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router, the virtual IP address being associated with one or more routers;

when it is determined to send a redirect packet to the primary IP address of the second router, composing a redirect packet indicating that packets to be sent to a specific network are to be redirected to the primary IP address of the second router and sending the redirect packet to the host; and

when it is determined to send a redirect packet to the virtual IP address of the second router, composing a redirect packet indicating that packets to be sent to the specific network are to be redirected to the virtual IP address of the second router and sending the redirect packet to the host.

23. A first router that supports a virtual router protocol, the first router being adapted for sending a redirect packet to a host, the redirect packet notifying the host that packets to be sent to a particular network are to be redirected to a second router, comprising:

means for determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router, the virtual IP address being associated with one or more routers;

means for composing a redirect packet indicating that packets to be sent to a

specific network are to be redirected to the primary IP address of the second router and sending the redirect packet to the host when it is determined to send a redirect packet to the primary IP address of the second router; and

means for composing a redirect packet indicating that packets to be sent to the specific network are to be redirected to the virtual IP address of the second router and sending the redirect packet to the host when it is determined to send a redirect packet to the virtual IP address of the second router.

24. A computer-readable medium adapted for sending a redirect packet from a first router that supports a virtual router protocol to a host, the redirect packet notifying the host that packets to be sent to a particular network are to be redirected to a second router, comprising:

instructions for determining whether to send a redirect packet to a primary IP address of the second router or to a virtual IP address of the second router, the virtual IP address being associated with one or more routers;

instructions for composing a redirect packet indicating that packets to be sent to a specific network are to be redirected to the primary IP address of the second router and sending the redirect packet to the host when it is determined to send a redirect packet to the primary IP address of the second router; and

instructions for composing a redirect packet indicating that packets to be sent to the specific network are to be redirected to the virtual IP address of the second router and

sending the redirect packet to the host when it is determined to send a redirect packet to the virtual IP address of the second router.

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